EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Charles Wieland (Reg# 33,096) on 4/7/2009.

The application has been amended as follows:

The following is an amendment of claim 1:

1. (Currently amended) A method for generating user preference data regarding a color characteristic of a reference image, wherein a preference image comprises the reference image converted to have a color characteristic that a user prefers, and a preference value comprises a color characteristic value of the preference image and a reference value comprises a color characteristic value of the reference image, the method comprising:

(a) generating a characteristic value pair, wherein the characteristic value pair includes preference value data and reference value data, which corresponds to a pair of the preference value and the reference value; and

(b) generating preference meta-data having at least one feature block for the characteristic value pair, wherein the feature block comprises:

a block header including a feature identifier corresponding to information identifying a color characteristic and a Bin number indicating a quantization level of the characteristic value, the color characteristic being at least one of color temperature, brightness, contrast, and saturation, wherein when the color characteristic includes contrast, a contrast value is determined as a standard deviation of luminance values of all pixels in the image to be displayed; and

at least one feature descriptor including the preference value and the reference value as values of the identified color characteristic for the preference image and the reference image, respectively,

wherein said method is carried by a computer.

The following is an amendment of claim 3:

3. (Currently amended) The method of claim 1, before step (a), further comprising:

providing a plurality of images having different color characteristic values with respect to a predetermined image; and

setting an image that the user has selected from the plurality of images as a preference image, setting an original image with respect to the preference image as a reference image, and generating preference image data and reference image data, which corresponds to a pair of the preference image and the reference image.

The following is an amendment of claim 4:

4. (Currently amended) The method of claim 1, before step (a), further comprising:

installing a unit for controlling a color characteristic of an image in an image display device; and

setting an image of which color characteristic is adjusted by a user using the unit for controlling a color characteristic, as a preference image, setting an original image of which color characteristic is not adjusted by the user, as a reference image, and generating preference image data and reference image data, which corresponds to a pair of the preference image and the reference image.

The following is an amendment of claim 5:

5. (Currently Amended) The method of claim 3, wherein the generating preference image data and reference image data includes, when the reference image has a contents identifier, generating preference image data, reference image data, and contents identifier data, wherein the contents identifier data, correspond to a combination of the preference image, the reference image, and contents identifier information.

The following is an amendment of claim 6:

6. (Currently amended) The method of claim 4, wherein the generating preference image data and reference image data includes, when the reference image

has a contents identifier, generating preference image data, reference image data, and contents identifier data, wherein the contents identifier data, correspond to a combination of the preference image, the reference image, and contents identifier information.

The following is an amendment of claim 7:

7. (Currently amended) The method of claim 1, wherein in step (a), when the reference image has a contents identifier and when a color characteristic value of the preference image is referred to as a preference value and a color characteristic value of the reference image is referred to as a reference value, generating preference value data, reference value data and contents identifier data, wherein the contents identifier data, correspond to a combination of the preference value, the reference value, and the contents identifier.

The following is an amendment of claim 10:

10. (Currently amended) A method for generating user preference data regarding a color characteristic of an image, wherein a preference image comprises an image converted to have a color characteristic that a user prefers with respect to a predetermined reference image, a preference value comprises a color characteristic value of the preference image and a reference value comprises a color characteristic value of the reference image, the method comprising:

(a) generating a characteristic value pair preference value data and reference value data, which correspond to a pair of the preference value and the reference value; and

(b) generating preference meta-data having at least one feature block for the characteristic value pair, wherein the feature block comprises:

a block header including a feature identifier corresponding to information identifying a color characteristic, the color characteristic being at least one of color temperature, brightness, contrast, and saturation, wherein the saturation value is obtained by the following steps comprising:

obtaining saturation of each pixel in a HSV color space from an RGB value of a pixel in the image, the saturation of the pixel being determined by the following steps comprising:

obtaining maximum and minimum values of the RGB value of the pixel, and

when the maximum value is equal to 0, setting the saturation of a corresponding pixel to 0, and when the maximum value is not equal to 0, setting a value obtained by dividing a difference between the maximum value and the minimum value by the maximum value, as the saturation of a corresponding pixel, and

generating a value obtained by adding saturation of the pixels and dividing the added saturation by the number of pixels, as a saturation value; and

at least one feature descriptor including the preference value and the reference value as values of the identified color characteristic for the preference image and the reference image, respectively,

wherein said method is carried by a computer.

The following is an amendment of claim 13:

13. (Currently amended) A method for generating user preference data regarding a color characteristic of an image, wherein a preference image comprises an image converted to have a color characteristic that a user prefers with respect to a predetermined reference image, a preference value comprises a color characteristic value of the preference image and a reference value comprises a color characteristic value of the reference image, the method comprising:

(a) generating a characteristic value pair, wherein the characteristic value pair includes preference value data and reference value data, which correspond to a pair of the preference value and the reference value; and

(b) generating preference meta-data having at least one feature block for the characteristic value pair, wherein the feature block comprises:

a block header including a feature identifier corresponding to information identifying a color characteristic, the color characteristic being at least one of color temperature, brightness, contrast, and saturation, wherein a contrast value CV is, when Yx is luminance of each pixel in the image and NumberofPixels is the number of pixels in the image, determined using the following equation:

$$CV = \sqrt{[\sum_{xc(pixels)}(Y_x - BV)^2] / NumberOfPixels}$$; and

at least one feature descriptor including the preference value and the reference value as values of the identified color characteristic for the preference image and the reference image, respectively,

wherein said method is carried by a computer.

The following is an amendment of claim 14:

14. (Currently amended) The method of claim 1, wherein step (a) further comprises,

when preference value data and reference value data exists before preference value data and reference value data in step (a) is generated, comparing the preference value data and reference value data generated in step (a) with an existing pair preference value data and reference value data and updating the preference value data and reference value data,

wherein the updating is, with respect to one preference value, when the reference value generated in step (a) is compared with the existing reference value and is the same as or similar to the existing reference value, removing the existing reference value.

The following is an amendment of claim 15:

15. (Currently amended) The method of claim 7, wherein step (b) further comprising,

when preference value data and reference value data exists before preference value data and reference value data in step (b) is generated, comparing the preference value data and reference value data generated in step (b) with an existing preference value and reference value and updating the preference value data and reference value data,

wherein the updating is, with respect to one preference value, when the reference value generated in step (b) is compared with the existing reference value and is the same as or similar to the existing reference value, removing the existing reference value.

The following is an amendment of claim 21:

21. (Currently amended) An apparatus for generating user preference data regarding a color characteristic of a reference image, wherein a preference image comprises the reference image converted to have a color characteristic that a user prefers a preference value comprises a color characteristic value of the preference image and a reference value comprises a color characteristic value of the reference image, the apparatus comprising:

a color characteristic calculating unit, which obtains an image color characteristic value of the preference image and the reference image, and generates a characteristic value pair wherein the characteristic value pair includes preference value data and reference value data which corresponds to a pair of the preference value and the reference value; and

a meta-data generating unit, which generates preference meta-data having at least one feature block for the preference value data and reference value data generated in the color characteristic calculating unit, wherein the feature block comprises:

a block header including a feature identifier corresponding to information identifying a color characteristic and a Bin number indicating a quantization level of the characteristic value, the color characteristic being at least one of color temperature, brightness, contrast, and saturation, wherein a contrast value is determined as a standard deviation of luminance values of all pixels in the image to be displayed; and

at least one feature descriptor including the preference value and the reference value as values of the identified color characteristic for the preference image and the reference image, respectively.

The following is an amendment of claim 23:

23. (Currently amended) The apparatus of claim 21, further comprising a first sample image obtaining unit, which sets an image that the user has selected from a plurality of images having different color characteristic values with respect to a predetermined image, sets an original image with respect to the preference image as a reference image, generates preference image data and reference image data which correspond to a pair of the preference image and the reference image, and outputs the pair to the color characteristic calculating unit.

The following is an amendment of claim 24:

24. (Currently amended) The apparatus of claim 21, further comprising a second sample image obtaining unit, which, when a unit for controlling a color characteristic of an image is installed in an image display device, sets an image of which color characteristic is adjusted by a user using the unit for controlling a color characteristic, as a preference image, sets an original image of which color characteristic is not adjusted by the user, as a reference image, generates preference image data and reference image data, which correspond to a pair of the preference image and the reference image, and outputs the pair to the color characteristic calculating unit.

The following is an amendment of claim 25:

25. (Currently amended) The apparatus of claim 23, wherein the generating preference image data and reference image data is, when the reference image has a contents identifier, generating preference image data, reference image data and contents identifier data, wherein the contents identifier data correspond to a combination of the preference image, the reference image, and contents identifier information.

The following is an amendment of claim 28:

28. (Currently amended) An apparatus for generating user preference data regarding a color characteristic of an image, wherein a preference image comprises an

image converted to have a color characteristic that a user prefers with respect to a predetermined reference image, a preference value comprises a color characteristic value of the preference image and a reference value comprises a color characteristic value of the reference image, the apparatus comprising:

a color characteristic calculating unit, which obtains an image color characteristic value of the preference image and the reference image, and generates a characteristic value pair preference value data and reference value data, which correspond to a pair of the preference value and the reference value,

wherein the color characteristic calculating unit comprises a saturation value calculating portion, which obtains saturation of each pixel in a HSV color space from an RGB value of a pixel in the image and generates a value obtained by adding saturation of the pixels and dividing the added saturation by the number of pixels, as a saturation value, and

wherein the saturation of the pixel is determined by the following steps comprising:

obtaining maximum and minimum values of the RGB value of the pixel, and

when the maximum value is equal to 0, setting the saturation of a corresponding pixel to 0, and when the maximum value is not equal to 0, setting a value obtained by dividing a difference between the maximum value and the minimum value by the maximum value, as the saturation of a corresponding pixel; and

a meta-data generating unit, which generates preference meta-data having at least one feature block for the preference value data and reference value data

generated in the color characteristic calculating unit, wherein the feature block comprises:

a block header including a feature identifier corresponding to information identifying a color characteristic, the color characteristic being at least one of color temperature, brightness, contrast, and saturation, and

at least one feature descriptor including the preference value and the reference value as values of the identified color characteristic for the preference image and the reference image, respectively.

The following is an amendment of claim 30:

30. (Currently amended) An apparatus for generating user preference data regarding a color characteristic of an image, wherein a preference image comprises an image converted to have a color characteristic that a user prefers with respect to a predetermined reference image, a preference value comprises a color characteristic value of the preference image and a reference value comprises a color characteristic value of the reference image, the apparatus comprising:

a color characteristic calculating unit, which obtains an image color characteristic value of the preference image and the reference image, and generates a characteristic value pair, wherein the characteristic value pair includes preference value data and reference value data which correspond to a pair of the preference value and the reference value,

wherein the color characteristic calculating unit comprises a contrast value calculating portion, which, when Yx is luminance of each pixel in the image and NumberofPixels is the number of pixels in the image, calculates a contrast value determined using the following equation:

$$CV = \sqrt{[\sum_{x\in(pixels)}(Y_x - BV)^2]/\,NumberOfPixels}$$; and

a meta-data generating unit, which generates preference meta-data having at least one feature block for the pair preference value data and reference value data generated in the color characteristic calculating unit, wherein the feature block comprises:

a block header including a feature identifier corresponding to information identifying a color characteristic, the color characteristic being at least one of color temperature, brightness, contrast, and saturation; and

at least one feature descriptor including the preference value and the reference value as values of the identified color characteristic for the preference image and the reference image, respectively.

The following is an amendment of claim 31:

31. (Currently amended) The apparatus of claim 21, further comprising a meta-data updating unit, which compares the preference value data and reference value data generated in the color characteristic calculating unit with an existing preference value and reference value data, updates the preference value data and reference value data, and outputs the pair to the meta-data generating unit,

wherein the updating is, with respect to one preference value, when the reference value generated in step (b) is compared with the existing reference value and is the same as or similar to the existing reference value, removing the existing reference value, and the updating is, when quantization levels of the two reference values are different, converting a value of high level into a value of low level and comparing with each other, and when image contents identifiers are added to the characteristic value pairs, even though the two reference values are the same as or similar to each other, if the image contents identifiers are different, without removing the existing reference value.

The following is an amendment of claim 43:

43. (Currently amended0 An image preference data recording medium on which is recorded preference meta-data for a generated characteristic value pair preference value data and reference value data which correspond to a pair of a preference value and a reference value, wherein a preference image comprises a reference image converted to have a color characteristic that a user prefers, the reference image comprises the predetermined image, the preference value comprises a color characteristic value of the preference image, and the reference value comprises a color characteristic value of the reference image, the preference meta-data having at least one feature block, the feature block comprising:

a block header including a feature identifier corresponding to information identifying a color characteristic and a Bin number indicating a quantization level of the

characteristic value, the color characteristic being at least one of color temperature, brightness, contrast, and saturation, wherein a contrast value is determined as a standard deviation of luminance values of all pixels in the image to be displayed; and

at least one feature descriptor including the preference value and the reference value as values of the identified color characteristic for the preference image and the reference image, respectively.

The following is an amendment of claim 45:

45. (Currently amended) A computer readable recording media on which a program code is recorded to execute the method of claim 1.

The following is an amendment of claim 47:

47. (Currently amended) The apparatus of claim 25, wherein the color characteristic calculating unit, when the reference image has a contents identifier, further comprises a contents identifier in the preference value data and reference value data and generates a combination preference value data, reference value data and contents identifier data.

Reason for Allowance

2. The following is an examiner's statement of reasons for allowance:

Regarding claims 1, 10, 13, 21, 28, 30, 43 and 45, and all dependent claims, closest art of record do not discloses all limitations. Specifically,

- Gu (US 5,874,988) discloses system and methods fro automated color correction.
- Reuman (US 6,069,982) discloses estimation of frequency dependence and grey-level dependence of noise in an image.
- Pettigrew et al (US 2001/0028736) discloses processing image data.

However, none of the above-cited reference, alone or in combination, discloses, teach or suggest iteratively determining and adjustment value from selective values that have periodical relation with an earlier-determined adjustment value.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claims 1, 3-21, 23-25, 27-33, 43-45 and 47 (renumber as 1-34) are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TSUNG-YIN TSAI whose telephone number is (571)270-1671. The examiner can normally be reached on Monday - Friday 8 am - 5 pm ESP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on (571)272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tsung-Yin Tsai/

Examiner, Art Unit 2624

April 8, 2009

/Samir A. Ahmed/
Supervisory Patent Examiner, Art Unit 2624